

REPRODUCTION 2 UNIT EXAM
BIOLOGY, 5TH PD.

➤ MALE REPRODUCTIVE SYSTEM:

- Functions:
 - Production of sperm
 - Transfer and placement of sperm into female reproductive system
 - Production of testosterone
- Structures:
 - Testes
 - Scrotum
 - Epididymis
 - Sperm duct (vas deferens)
 - Accessory organs:
 - Seminal vesicles
 - Prostate glands
 - Urethra
 - Penis
- Sperm production/transport:
 - Testes = where sperm and testosterone are produced
 - Pathway of sperm:
 - Testes --- vas deferens --- accessory organs --- urethra --- penis

➤ FEMALE REPRODUCTIVE SYSTEM

- Functions:
 - Menstruation
 - Childbirth (nourishes fetus, etc).
 - Production of hormones and sex cells --- delivers to uterus that protects and nourishes developing embryo
 - Produces female hormones (estrogen and progesterone), that control the menstrual cycle
- Pathway/Structures:
 - Ovaries --- fallopian tubes (fertilization happens here) --- uterus --- birth canal/cervix --- vagina
- Egg production/release
 - Egg cell is in a tiny sac called a follicle
 - Each month, follicle matures and bursts --- egg released (ovulation) --- passes into oviduct (fallopian tube) --- enters uterus
- Menstrual Cycle (funfunfun):
 - Prepares uterus for pregnancy (women who don't want kids just get to suffer)
 - Begins at puberty, ends at menopause
 - 28 day cycle (give or take a few days)
 - Begins with the thickening of the lining of the uterine wall filled with blood vessels
 - If egg is not fertilized, uterine lining breaks down and detaches --- menstruation

- Stages:
 - Follicle stage:
 - Estrogen and FSH increase. Egg grows in size/develops, uterine lining gets thicker
 - Ovulation:
 - Spike in LH, also in estrogen. Egg is released, leaving behind corpus luteum. Uterine lining is still getting thicker
 - Corpus Luteum stage:
 - Spike in progesterone, also some estrogen. Uterine lining is getting thicker.
 - Menstrual period:
 - Rise in FSH, but overall low. Uterine lining is shed, gets less thick.
- Feedback mechanisms in the menstrual cycle:
 - Estrogen inhibits FSH production --- when too much FSH is produced, estrogen is released (ex.)

➤ FERTILIZATION

- Internal (ex. human)
 - Occurs in fallopian tube
 - Sperm meets egg, forms diploid zygote, etc.
- External (ex. salmon)
 - Female releases eggs, male distributes sperm across them

➤ HUMAN EMBRYONIC DEVELOPMENT

- Zygote divides into many cells via mitosis (cleavage)
- Form blastula (which has 128 cells)
 - Moves into uterus and attaches to lining (implantation)
- Gastrula = 3 germ layers form, develop into body systems
- Differentiation and Growth:
 - Germ layers undergo changes = differentiation
 - Cells begin to specialize and develop own specific structures and functions **due to active vs. inactive DNA** (ex. Blood vs. neuron vs. skin)
- Development (human):
 - Develop in a fluid environment (internal)
 - Series of membranes around embryo
 - Amnion protects and holds embryo in amniotic fluid
 - Nutrients, gases, and wastes = exchanged between mother and fetus through the blood vessels of the placenta
 - Placenta * = organ that connects fetus (by umbilical cord) to uterine wall. Exchange of substances occurs via diffusion/active transport

➤ SEXUAL REPRODUCTION IN FLOWERING PLANTS

- Structures
 - Sepals = Leafy things at the bottom, protect petals
 - Petals = Surround/protect reproductive organs

- Stamens = male reproductive organs. Has anther (oval shaped, supported by stalk), filament (stalk, supports anther), and pollen grains (have monoploid sperm nuclei in them)
- Pistils = female reproductive organs. Has stigma (receives pollen grains), style (connects stigma and ovary), ovary (where monoploid egg cells are produced inside smaller structures called ovules)
- Self pollination = Transfer of pollen from anther to stigma of same plant
- Cross pollination = transfer of pollen from anther to stigma of different plant
- Process of fertilization:
 - Pollen grain reaches stigma, which germinates --- pollen tube grows from pollen grain down through stigma and style to ovule --- 2 sperm nuclei and the tube nucleus pass down through pollen tube --- sperm nuclei enter ovule, where egg nucleus is fertilized to form a diploid zygote
 - After fertilization, ovule ripens to seed and ovary develops into a fruit